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ABSTRACT

This lecture considers the effectiveness of television as a medium for distance education in light of the experiences of the Open University in Great Britain. The main theses of the paper are that television is an important component of high quality open and distance education, but only when its unique teaching characteristics are exploited, and that the effectiveness of television depends to some extent on how the material is structured and to some extent on the technology available to the student. Discussion of the presentational characteristics of television presents five examples of ways in which it can bring unique teaching resources to students. How such material actually influences the learning process is emphasized, e.g., the usefulness of documentary-style programs in encouraging the skills of analysis and application of knowledge. The advantages of using videotape cassettes as opposed to live broadcasts are also discussed, including student control over viewing and increased learning effectiveness. Finally, the advantages and disadvantages of interactive television and Tutored Video Instruction are considered. The television extracts that were presented for each of the examples are listed, as well as 22 references. (EW)

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THE OPEN UNIVERSITY

Television, learning and distance education

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The text of an inaugural lecture delivered at the Open University

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Introduction

Vice-Chancellor, colleagues and guests. First of all, let me say how much I welcome the opportunity of a public platform from which to examine the role of television in distance learning. I believe there is a need for a university-wide forum to discuss our teaching methods, especially given the rapid developments in technologies now available to open and distance learning, and I hope you will forgive me, Vice-Chancellor, for using the occasion in this way.

My main thesis may be stated as follows:

Television is an important, perhaps even necessary, ingredient of high-quality open and distance education, but only when it exploits fully its unique teaching characteristics. Secondly, the effectiveness of television depends to some extent on how the material is structured and to some extent on the technology available to the student.

Now after 17 years, the production of over 3,000 programmes, and the expenditure in 1987 prices of over £150 million, you might feel it was a scandal if television wasn't important at the Open University. Surely it is self-evident. The only surprise to some may be not so much the message I bring as the fact that I am the messanger! But before everyone gets up to go, let me say that there are many of my academic colleagues at the Open University who still doubt the value and importance of television. Very few distance teaching institutions use television extensively as part of a multi-media teaching package. There is a feeling among some educationalists that television is passe´ and that the future lies with computer-based technology, so it is not

surprising that one or two of the newer distance learning institutions - I am thinking particularly of the Dutch Open University - are putting their faith more into computer-based learning. A large number of the smaller distance teaching institutions established after the Open University have managed without using television to any significant extent. They have looked at the costs, and decided that television is not worth it. Lastly, television itself is a rapidly changing technology. As well as broadcast television, there are now video-cassettes, cable, satellite, video-discs and compact discs. Part of my argument is that each technology that 'carries' television differs in the way it influences learning. It is timely therefore to clarify the reasons why television is important, and in particular to re-assess its role in distance education. (Incidentally, I use the term 'television' to encompass all forms of televisual presentation.)

I don't though intend to rehearse the now well-known general arguments that have been put over the years for *broadcast* television at the Open University: a 'window on the world' for our students, a chance for the public to see what the University is offering, the pacing of students' study, and the 'enjoyment factor' which well-produced television brings to learning. While these reasons are still by and large valid, what I want to do instead is to look at the nature of *learning*, and to show how television can substantially improve the *quality* of students' learning at a distance.

Is television different from other media?

I want to tackle a crucial and difficult question: do we learn differently from television than from say print or face-to-face tuition? Another way of putting this question is to ask: are there

limitations in learning from print, and can television overcome some of those limitations?

The answer may seem obvious to those who have made or worked on Open University television programmes. However, some distinguished American academics have argued that there are *no* significant differences between media, in terms of what students learn. For instance, on the basis of aggregating and analysing a large number of laboratory controlled experiments, Richard Clark (1983) reported 'consistent evidence for the generalization that there are no learning benefits to be gained from employing any specific medium to deliver instruction.' He claimed: '...media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition.'

What matters to Clark is not the medium, but, in his terms, the *method* of instruction used within that medium. Put simply, if you get the instructional approach right in terms of clear objectives, the right level for the target group, clear structuring of information, student activity, feedback, and so on, then the choice of medium for delivering this approach becomes irrelevant, except on grounds of cost and administrative convenience.

I have some sympathy for the latter part of Clark's argument. Research into educational media consistently shows greater differences in learning effectiveness within a particular medium (e.g. between two television programmes) than between media (e.g. between a television programme and a text). There are basic principles for effective teaching which you ignore at your peril, *irrespective* of the medium.

Nevertheless, I disagree completely with Clark's main point, that there are no learning differences due to the nature of different media. Most of the studies Clark was analysing compared a face-to-face lecture with a straight television relay of that lecture (or with the text of the lecture). However, such a use of television fails to exploit the unique presentational characteristics of television. As soon as television goes outside the lecture theatre, to present real-world examples or animation, for example, then it is teaching in a different way from a classroom lecture. Let me give you an example of what I mean. The extract is from D208, Decision-Making in Britain. This part of the course is about the relationship between the police and community, and looks at how decisions were made about whether or not to put a 'bobby-on-the-beat' in a village in the North of England.

EXTRACT 1

This programme clearly brought resources to the learner which no classroom lecture could have captured. It is clear that the teaching role of this kind of programme is very different from that of a classroom lecture. Few North American studies though have attempted to look at the difference in effectiveness between programmes of this kind and a classroom lecture. This of course is because one is not comparing like with like. The interesting question that I want to address in this lecture is: what *are* the teaching differences between this kind of programme and other forms of teaching? And how does this affect the learning process?

For me, there are three main educational characteristics of television. The first is what Clark is discussing: its *delivery* characteristics. It can distribute learning to places other than

from where the teaching originates. In this, it does not differ from many other media, such as books or radio. The second are its *presentational* characteristics, which do differentiate it from other kinds of media. The third are its *control* characteristics, which lead to differences with regard to learning *between* the different *forms* of television (broadcast, cassette, disc).

Presentational characteristics

Television is a very rich medium in terms of information density, because of the amount and type of symbol systems it can simultaneously carry. It is the only medium which combines words, still and moving pictures, events occurring in real time, slow or accelerated motion, animation and even text. This gives it a power to present information that other media lack.

Unique teaching resources

We have already mentioned one presentational characteristic, perhaps the most obvious, and that is television's ability to bring resources to learners which would not be possible through any other medium, or even through direct experience. This is particularly important for distance learners, who cannot get to colleges, or who cannot share in any other way a common teaching experience, such as field work. I do not intend to elaborate on these. Since 1974, the Broadcast and Audio-Visual Sub-Committee has had at its disposal a list of such functions for television to aid in its allocation procedures (see Bates, 1984). There is a video-tape here which contains five examples of the many different ways in which television can bring unique teaching resources to learners. I want to concentrate in this lecture on *how* such material actually influences the learning

process.

From the concrete to the abstract

A major presentational characteristic of television is its ability to provide an illustration or a concrete example of an abstract principle or generalisation. Examples or illustrations can be given in texts, but the power of the moving picture, combined with the ability to synchronise such pictures with words and sound, creates striking audio-visual images symbolising important concepts or ideas. Pavio (1980) for example argues that we carry around in our heads a library of audio-visual images. These images can be used by the learner like keys to a room. One function of television is to generate appropriate audio-visual images linked to otherwise difficult abstract concepts. Let me give you an example of how television can provide a concrete illustration of a particular abstract concept, $(a+b)^3$.

EXTRACT 2

It is extremely valuable to be able to provide higher education distance learning students with powerful audio-visual concrete examples. Much of higher education is about abstraction. Abstract ideas are usually stored and communicated in words. However, cognitive psychologists such as Bruner and Piaget have recognised that full understanding and internalisation of abstract concepts is preceded by some form of direct experience, some manipulation or exploration by the learner of the boundaries of a concept. It is often difficult to provide this physical experience directly for distance learners, but television can act as an effective substitute.

Adult learning can easily fixate, in Piagetian terms, at the concrete, operational stage. Some help is therefore often needed to move learners from the concrete to the abstract, or from the specific to the general. Because television can combine concrete images *with* words, it can act as a bridge between the concrete operational and formal (more abstract) stages of learning.

One of the major limitations of both text and computers is their inability to synchronise natural voice with full moving pictures, yet the importance of being able to link words and pictures to develop this higher level of abstract thinking cannot be too strongly emphasised. Salomon (1983) for instance has been critical of the failure of some Open University programmes to make clear the relationship between the examples and the concepts they are illustrating. Let us look at the following extract from D102, TV1. The programme is looking at 'rules' underlying behaviour.

EXTRACT 3

Salomon argues that there is a danger that students will focus on the example - the act of vandalism - rather than see it as an example of 'rules' underlying behaviour, which is the purpose of the extract. This problem is more likely to arise when the example is particularly striking - or in this case, shocking - in its own right. Salomon argues that for the necessary learning to take place, 'the relationship between the illustrator and the illustrated needs to be made specific.'

However, it is not as simple as that. Salomon, in another study (1979), recognises that the amount of help given to a learner depends on the already existing level of knowledge. Thus *too*

explicit linkage between example and concept can actually inhibit learning, if learners are already confident in their understanding of the concept. Deciding when to make explicit the link between example and concept requires fine judgement of the learners' current state of knowledge. What does not appear to be in dispute though is the value of television in providing those links.

For instance, in one of our earlier surveys Margaret Gallagher (1977) found that in Mathematics courses, it was the borderline students (i.e. students getting Grade C or D for the course) who tended to rate the programmes as very helpful (50% of C/Ds, compared with only 24% of A/Bs). While this tendency was most marked in Mathematics courses, it was also found in all other faculties except Arts. My own interpretation of this finding is that the higher achieving Mathematics students were able to follow the course primarily from the text, i.e. they were already able to work at a high level of abstraction, and hence needed less help from television, but for those struggling with the course, the television programmes were able to provide extra help in understanding concepts, probably through the use of concrete examples. Research then by both Salomon and Margaret Gallagher does suggest that television can be of particular value to those students on a course, perhaps a minority, who are struggling with difficult concepts. Television seems to be of particular value to 'high risk' students, and can help to keep down drop-out resulting from the difficulty of a course.

Content or skills?

Up to this point, I have been discussing how the presentational characteristics of television can help student comprehension of

abstract ideas, through providing concrete examples. However, there are other unique ways in which television can help the learning process. Let's look at the next two extracts. The first is from T101; the second is from a CE course, P653, Caring for Children and Young People. I want you to analyse the different ways in which viewers are expected to respond to these two programmes.

EXTRACTS 4 and 5

The first example was clearly aimed at helping students to comprehend some basic principles, and to understand how some equipment worked. It had a clear cognitive goal. The second one was likely to evoke not only strong feelings from the viewer - an affective goal - but in the context in which it was to be used, it was also meant to encourage students to analyse for themselves how the foster mother handled the situation, and what they themselves might do in similar circumstances. This extract provided an opportunity for students to make their own interpretations, and to develop skills of analysis and application of principles taught elsewhere in the course.

This brings us right up against a very important issue, and that is the type of learning that we as teachers are trying to develop. Much of the research conducted in North America has been concerned with measuring to what extent a particular medium leads to *comprehension*. Are the students able to reproduce accurately and with understanding what they have been taught? However, in higher education we are often wanting to do more than that. To what extent can the learner *apply* what has been taught to new situations? Can the learner *evaluate* evidence or arguments, on the basis of what he or she has been taught? Can

the learner *analyse* a new situation on the basis of previously taught concepts? Can the student bring new or unanticipated *insights* to the situation portrayed?

A major criticism of distance learning is that the hard work, the evaluation of what it is important to learn, the analysis of issues to be taught, is done by the teacher, not the student. Knowledge is packaged in texts by the teacher, then studied and churned back by the learner. The structuring of the print material makes it difficult for students to impose their own order or structure on the subject matter, or to re-structure it for themselves.

Television, because of its richness of symbol systems, lends itself to interpretation, to presenting new situations which have to be analysed or recognised in terms already taught in the texts. In this sense, television is very different from computer-based learning, which has great difficulties in handling situations where a wide range of different responses and interpretations from students are all legitimate. There are many areas of study, not only in the Arts and Social Sciences, but also in Science and Technology, where it is important to develop students skills in handling open-ended situations, or to encourage students to bring not only their learning from the printed materials, but also relevant life experiences, to analyse situations and suggest possible courses of action. This is of particular relevance to adult students studying at a distance, especially in areas of professional development and up-dating.

A particular form of Open University television programme which can encourage skills of analysis and application of knowledge is the documentary-style programme. The extract from the programme with the foster mother and child was a classic

example. While documentaries encompass a wide range of production styles and approaches, they tend to have a loose semantic structure (e.g. there is not usually a strong, continuous narrative line), they tend *not* to build in explicit guidance or interpretation in the sound track, they tend to be apparently neutral with regard to the messages they are carrying, and there are rarely explicit links to other course material in the programmes themselves, although the content may be very relevant to the course. (In the Open University, the term 'case-study' is often used for this kind of programme, but case-study television programmes can also be highly structured semantically, with explicit links to the course material, and strong guidance to viewers on how to interpret the material.)

Open-ended documentary style programmes then can be a valuable teaching resource, if used to encourage students to interpret, analyse and problem-solve. However, far too often the educational purpose behind a documentary-style programme is not articulated, either within the course team, nor, more importantly, to the students themselves. In fact, there is strong evidence that these kinds of programmes are often ineffective in developing students' skills of analysis and interpretation.

We conducted a number of studies of such programmes (see Bates and Gallagher, 1977), and discovered what I call the 'one-third rule'. One third of students watching this kind of programme knew what they were supposed to do with such material in their course, and were able to do so successfully. You will probably not be surprised that these students tended to get high course grades. Another third knew that this type of programme was not meant to be didactic, and that they were meant to analyse and interpret it, but were unable to do so. The

last third of students not only failed to approach the programme in the way intended, but were totally unaware that they were meant to do so. This group of students were highly instrumental in their approach to studying at the Open University. They wanted didactic programmes, and were annoyed that they were expected to watch, in the words of one student, 'this irrelevant rubbish'. This group tended to have relatively low grades, but by definition had learned how to survive in the OU system.

It is relevant to compare this with research carried out for TVOntario in Canada (Matsui, 1981). That study found that there were roughly three quite distinct types of adult viewer. The first group could be defined as 'open' learners, in that they were interested in the world around them, and were interested in watching television as one source of knowledge. This group constituted about one third of the adult population, were slightly older than the other groups, and tended to be more highly educated. The largest group, about half the adult population, could be classified as 'uninterested' learners. They were not interested in formal education of any kind, watched television primarily for entertainment purposes, and tended to have low levels of formal education. The third group were defined as 'instrumental' learners. These constituted about 15% of the population. They were interested in learning specifically as a means to an end: qualifications or skills which would lead to better jobs. Reading the socio-economic description of this group - young, upwardly mobile blue collar or office workers, in the middle range of education - tempts me to call them yuppies. This group, interestingly, did not view television as much as the other groups, and did not consider it to be a source they would use to further their knowledge-base.

I see a strong correlation between TVOntario's 'instrumental' learners and at least some Open University students, especially in Science and Technology.

There seems to be important lessons here for how we should use television. Documentary-style programmes are one way of developing or encouraging students to use the higher-level skills of analysis, interpretation, evaluation and problem-solving. However, merely providing such programmes is insufficient; many students will not develop these skills without some assistance. In my view, this assistance should come in the programmes themselves. This means adopting a strategy of gradually moving from highly didactic to more open-ended programmes, with guidance within earlier programmes on how to use or interpret the television material. There was an attempt to adopt this strategy on D102, and the student response to the programmes on this course has been highly favourable. Another very successful way to help students is to provide a discussion of a television programme on a separate audio-cassette. Nicola Durbridge (1986) found that integrating audio-cassettes and notes with a television programme enabled students to analyse the video material more easily than placing the analysis within the TV programme itself.

Control characteristics

So far, most of the points made apply to television in whatever form it is used: as a broadcast, on cassette, or on disc. Nevertheless, the research we and others have conducted indicates that even when television is used appropriately, in terms of exploiting its unique characteristics to assist the learning process, many students still have difficulty in learning

effectively from it. Many of these difficulties stem from the ephemeral nature of the broadcast medium, so now I want to look at the impact on learning of the technological form in which the television material is carried.

Broadcasting is an ephemeral medium. This has caused all kinds of problems for learners within the Open University system. A whole range of Open University studies (Bates, 1975, Gallagher, 1977, Grundin, 1978, 1979, 1980, 1981, 1983, 1985) established the impact of loss of 'quality' transmission times and repeats on student viewing. In 1977 viewing on transmission averaged 65% (i.e. on average, a student would watch about two-thirds of the programmes on a course; or two-thirds of the students on a course would watch each programme, on average). By 1984 this had dropped to 48%. The situation however was saved by the arrival in an increasing number of homes of the video-cassette recorder. The overall viewing rate is now around 60% (combining both viewing on transmission and on cassette), although this refers only to *new* courses, since the last University-wide survey of viewing rates was in 1983.

Before going any further, it may be worth looking at the current figures for video-cassette ownership. In a survey carried out at the end of 1986 (Kirkwood, 1987), 60% of Open University students on new courses had a VCR in their own home, and 77% reported that they either had access at home or 'convenient access elsewhere'. The increase in OU students owning VCRs is not slowing down to any significant degree, and it does seem that on current trends, over 80% will have their own VCR by 1990. It may be worth pointing out that this will far exceed students' ownership of home computers, and there is no problem of standardisation on VCRs (VHS seems to rule supreme).

Furthermore, studies by the BBC Audience Research Department have found that ownership of VCRs is not income-related (except for the unemployed), while ownership of home micros is.

The value of the video-cassette lies not just in its ability to allow students to view programmes at more convenient times. It also enables learning from television to be much more effective. Indeed, the video-cassette is to the broadcast what the book is to the lecture. Let us compare the control characteristics of broadcasts and cassettes.

Broadcast vs recorded TV

Broadcast	Cassette
Fixed time to view	Available when needed
Ephemeral/once only	Repetition/search/mastery
Difficult to reflect	Analysis/relating/reflection
One speed	Individually paced
Integration more difficult	Integration easier

There is probably little point in elaborating on the advantages to learners given by the control characteristics of cassettes. If a major value to students of television is its ability to link concrete examples to abstract ideas, and to enable learners to interpret and analyse material, it would seem essential that learners can access the television material at the appropriate point in their studies, that they can stop and reflect on what they have just seen before moving on to the next part of the programme, and that they can watch the same scene as many times as necessary to interpret it.

The question is: *do* students use cassettes in this way? The evidence to date suggests that they do not. It is worth pointing to the difficulty of studying even on cassette when the television material is structured as a continuous, unbroken sequence, as if it was a broadcast. Studies of teachers' use of cassette recordings of broadcast television in schools (Choat et al., 1987) show that teachers rarely stopped the tape in the middle of a programme, but continued to use it as if it were a broadcast. Durbridge (1986) also found that Open University students often preferred not to 'interrupt' recordings of broadcasts, but to watch straight through, although they would often come back to a section of a programme at a later date.

It may seem then that the answer is to design television material in such a way that it exploits the control characteristics of cassettes. You have already seen extracts from a cassette which I made with Frances Berrigan on using television for distance education. We built on experience from EM235, which was the first OU course which attempted to exploit the characteristics of video-cassettes. Let us look at EM235. This was aimed at teachers, and the course aimed to change teachers' attitudes to the teaching of mathematics, away from mechanical rules and more towards understanding mathematics as a form of language. The extract is from the first programme, and is meant to be used in a group situation. The teachers are asked to analyse and discuss what the problems are that pupils are having. The text, and subsequent television material, then suggests alternative approaches.

EXTRACT 6

So what design features for cassettes can we identify?

Implications for programme design of student control characteristics

1. Use of segments
2. Clear stopping points
3. Use of activities
4. Indexing
5. Close integration with other media (e.g. text, discussion)
6. Concentration on audio-visual aspects.

In fact, very few Open University programmes have been made in such a format to date. Currently, Beryl Crooks, Clive Lawless, Nicola Durbridge and myself are carrying out a study to see how students use television material on cassettes. The evidence to date (mainly from Nicola Durbridge's previous studies of EM235, MST322 and E206) suggests that students working individually at home rarely stop cassettes, even when clearly instructed to do so. Part of the purpose of the study is to validate this finding, and to find out how and why students use recordings in the ways they do.

Cassette design, skills development and assessment

In the meantime, a number of points can be made about the relationship between video-cassette design and the development

of intellectual skills. First of all, in any situation where there is ambiguity or a variety of legitimate responses, students still need to know what *counts* as a legitimate response. This can be provided in a number of ways. The first is through discussion with the tutor. Perhaps even more valuable is the opportunity to discuss responses with other students. Both of these are difficult, but not impossible, to organise at a distance, but without this kind of follow-up, the value of such a learning experience can easily be lost. Durbridge (1982) found for instance that on EM235, students were more likely to stop the cassette and answer the questions in a group situation - where they could discuss the question and compare answers - than when working alone.

Secondly, it is probably not sensible, at least at this stage, to lay down hard and fast rules about the extent to which student interaction should be structured on video-cassettes. We have seen earlier that the amount of guidance needed depends on the students' current state of knowledge and confidence in the subject, and probably also on their preferred learning style. One of the major advantages of television over computers, for instance, is the students' ability to interact with and interpret the material in a variety of ways. Nevertheless, having said that, students often do need help to use television effectively for educational purposes, and my own view is to lean towards video materials which do exploit the control characteristics of cassettes, and which do encourage student interaction and activities.

The next issue is more serious, and is to do with the relationship between television, learning and student assessment. It is perhaps not surprising that students fail to use television

effectively for developing high level skills of analysis and interpretation if our assessment system effectively bars us from using television for assessment purposes, nor sets questions which tests those skills. In my view, an excellent assessment of a student's understanding of some of the main concepts in a course would be to give a short television extract and to ask the student to explain or analyse the extract in terms of what has been learned in the texts. However, because of the fear that some students cannot see the programmes or will not have a VCR, it is not possible to set even tutor-marked assignments based on television material, unless students also have an alternative question that does not require them to view the television. Margaret Gallagher (1976) found that when this was done, more students chose the alternative, and tended to score more highly on the alternative than on the television question, mainly because the television questions tended to be more challenging. Practical considerations at the moment rule out using television in examinations, although if it was considered important enough, I am sure that it is not beyond our ability to develop a feasible way of doing this. If we really are concerned about the quality of our teaching, we cannot afford to waste the potential of television to develop these high level skills, and our assessment procedures should encourage rather than inhibit this.

Low-cost television

Lastly, I do want to say something about two kinds of low-cost television: Tutored Video Instruction (TVI) and what in North America is called interactive television. TVI originated at Stanford University in California. It involves relaying classroom lectures (by cable, satellite or video-cassette) to a range of different sites, where local face-to-face tutors handle questions

and discussion following viewing of the programme. The lectures are usually given by leading experts in the field, specially brought in for the programme. In some variations, students, or more usually tutors, at remote sites can phone in questions to the lecturer, who answers live on-air. TVI is a very low-cost form of television, and allows leading experts, needing little extra preparation, to bring their latest work to a wider audience. There is growing interest in this country in TVI, for these reasons. The Open University itself produces TVI on contract for CE and for one or two undergraduate courses. Let me show you an example. The presenter is Professor Heinz Wolff, of Brunel University, lecturing for the course: 'Space Technology'.

EXTRACT 7

There are two points to note here. TVI exploits neither the unique presentational characteristic of television nor the control characterisitics of cassette or discs. The kind of material we have seen could equally well have been presented either as text, or as audio-vision. The programmes are usually played straight through as a lecture, although they could be segmented, if intended to be used on cassette. The justification for television lies in the low cost and convenience, and the *distributional* characterisitics, rather than in the presentational use of the medium. In this case, television's effectiveness *could* be judged by direct comparison with a classroom lecture, audio-vision or text. Unfortunately, there are no published evaluations of the learning effectiveness of TVI, as far as I know, although Mike Nathenson of IET is planning to evaluate three OU courses using TVI.

Interactive television should not be confused with interactive video. Interactive television is a term used in North America for

television lectures or panel discussions followed by a live phone-in, with questions answered on air. Let me give you an example from a North Island College psychology course carried by Knowledge Network in Canada.

EXTRACT 8

Again, this use of television does not attempt to exploit its unique presentational characteristics - it could be presented equally well as a radio programme - but it does exploit the opportunity for open-ended, direct interaction between lecturer and student. Again, few evaluations of the effectiveness of this kind of use have been made, but the main advantage once again is low-cost and at least some form of interaction between teacher and student.

The main reason for showing the last two examples is to indicate that cost, convenience and the opportunity for direct contact with teachers are important criteria for selection, *as well as* the presentational power of television.

Conclusions

Television can provide unique learning opportunities for distance education students. However, exploiting the presentational, rather than distribution, characteristics of television is costly. Where high quality learning is required, i.e. where students are required to develop deep comprehension or higher level learning skills, there are good pedagogic reasons for 'high-quality' production which exploits the presentational characteristics of television. This may be particularly important where students have little previous conceptual knowledge in a subject, or have had little previous experience in developing skills of analysis,

interpretation, application or problem-solving.

There is also some evidence to suggest that 'high-quality' television production can also reduce drop-out due to conceptual difficulties faced by students, and is associated with higher grades. Compared with most other distance teaching and open learning institutions, the Open University has very low attrition rates per course. Indeed, its conversion rate of first-time registrants to graduates (33%) is higher than some North American institutions' pass-rates for a single 13 week distance education semester. As we all know, drop-out is a complex, multi-factor problem. It would be too simplistic to assign low drop-out rates entirely to the use of 'high quality' television. Nevertheless, the survey statistics have consistently shown that those who watch programmes the most obtain the highest grades (Bates, 1975), that borderline students rate television the most helpful (Gallagher, 1977), and that the more television programmes there are on a course, the lower the drop-out rate (Parlett and Woodley, 1983).

'High quality' television is also a very different medium from either text or computers. Television is not a good medium for teaching large quantities of dense, abstract ideas or for comprehension of detailed arguments or facts. It also lacks the ability to provide student feedback. It can though help students acquire difficult abstract ideas through the use of concrete examples, it can deal better with ambiguous or open-ended situations, and does have the capacity to stimulate a very sophisticated level of thinking from learners, leaving the interpretation and analysis open to the student. These are generally areas that both text and computers find difficult to handle.

The ephemeral nature of broadcasting makes learning more difficult. The permanence of recorded material opens up a whole new range of possibilities for increasing learning effectiveness from television. There is some evidence though that the potential even here is difficult to realise. It is difficult to find the right balance between structuring material and inhibiting the way students wish to use television. More research in this area is urgently needed. Also, styles of production suitable to the more instrumental approach of registered students may not appeal to the wider general public, yet one of the most valuable aspects of broadcasting is the publicity it brings to Open University courses. One strategy that might be considered, particularly for courses with relatively low enrolments which nevertheless really need television, is dual-purpose production. In other words, material would be collected, edited and broadcast in the 'standard' format for the public at large, but then re-edited to exploit cassette characteristics, and mailed to registered students.

I have not talked about computer-controlled video-discs, because I do not believe that this will be a significant medium for home-based learners, at least for the next ten years, although this medium will be important for open learning in industrial training. I am concerned though that by linking a computer to a video-disc, too often designers unnecessarily restrict the potential for open-ended responses that television can encourage, because of the limitations of the computer to handle such open-ended responses.

Lastly, the pedgagogic rationale is not the only, indeed probably not the most important, criterion in deciding whether or not to produce 'high quality' television. Costs, publicity, student numbers, ability to access easily the material, teacher and

student convenience, and organisational and political factors are all important. However, for far too long we have lacked a strong *pedagogic* rationale for using 'high quality' television; without it, it will be increasingly difficult to justify the high costs of 'high quality' television or to resist cheaper alternatives.

But I would like to end by pointing out that you can analyse television to death. It can be both great fun *and* educational, as this extract from Consumer Rights shows.

EXTRACT 9

Television extracts

No.	Agency	Course	Programme	Producer	Academic
1.	BBC/OUP	D208, *Decision-Making in Britain*	TV8, *Operational Decisions*	Francis Sealey	Victor Jupp
2.	BBC/OUP	M101, *Mathematics Foundation Course*	TV2, *The Binomial Theorem*	David Saunders	John Mason
3.	BBC/OUP	D101, *Social Sciences Foundation Course*	TV1, *Rules Rule, OK?*	Carol Haslam	Andy Northedge
4.	BBC/OUP	T101, *Living with Technology*	TV6, *Sound in View*	Phil Ashby	David Crecraft

5.	BBC/ Horizon	P653, *Caring for Children and Young People*	VC-1.	Ann Pointon	Ann Brechin
6.	BBC/OUP	EM235, *Developing Mathematical Thinking*	TV1, *Subtraction: Doing and Talking*	Jean Nunn	Nick James
7.	OPEN UNIVERSITY	*Introduction to Space Technology*	*Laboratory in Space: Part 2: Space Biology*	Andrew Rix	Heinz Wolff
8.	KNOWLEDGE NETWORK	*Psychology*	*Childbirth*	North Island College	Michael Catchpole
9.	BBC/OUP	P931, *Consumer Decisions*	TV3, *Turning on the Heat*	Carol Haslam	Not known

References

BATES, A.W. (1975) *Student use of Open University broadcasting.* Milton Keynes: The Open University

BATES, A.W. (1984) *Broadcasting in Education: An Evaluation.* London: Constables.

BATES, A.W. and GALLAGHER, M. (1977) *Inproving the effectiveness*

of Open University television case-studies and documentaries.. Milton Keynes: The Open University (mimeo).

CHOAT, E. et al. (1987) *Teachers and Television.* London: Croom Helm

CLARK, R. (1983) 'Reconsidering research on learning from media', *Review of Educational Research*, 53,4.

DURBRIDGE, N. (1982) *Developing the use of video-cassettes at the Open University.* Milton Keynes: The Open University (mimeo)

DURBRIDGE, N. (1985) *Report to MST322 course team on student use and opnion of video modules 1 and 2* Milton Keynes: The Open University (mimeo)

DURBRIDGE, N. (1986) *Integrating television and audio-cassettes: a case-study of TV6, E206.* Milton Keynes: The Open University (mimeo)

GALLAGHER, M. (1976) *D302,'Patterns of Inequality': TV1: A Woman's Work:* Milton Keynes: The Open University (mimeo)

GALLAGHER, M. (1977) *Broadcasting and the Open University student.* Milton Keynes: The Open University (mimeo)

GRUNDIN, H.U. (1978) *Broadcasting and the Open University student: the 1977 survey.* Milton Keynes: The Open University (mimeo)

GRUNDIN, H.U. (1979) *Open University broadcasting: results of the 1978 survey.* Milton Keynes: The Open University (mimeo)

GRUNDIN, H.U. (1980) *Audio-visual and other media in 91 Open University courses.* Milton Keynes: The Open University (mimeo)

GRUNDIN, H.U. (1981) *Open University broadcasting times and their impact on students viewing/listening* Milton Keynes: The Open University (mimeo)

GRUNDIN, H.U. (1983) *Audio-visual media in the O.U.: Results of a survey of 93 courses.* Milton Keynes: The Open University (mimeo)

GRUNDIN, H.U. (1985) *Report of the 1984 AV media survey* Milton Keynes: The Open University (mimeo)

KIRKWOOD, A. (1987) *Findings from the costs/access survey 1986: access to video equipment for study purposes.* Milton Keynes: The Open University (mimeo)

MATSUI, J. (1981) *Adult learning needs, life interests and media use: some implications for TVOntario.* Toronto: TVOntario (mimeo)

PAIVIO, A. (1980) 'Imagery as a private audio-visual aid', *Instructional Science*, 9,4.

PARLETT, M. and WOODLEY, A. (1983) 'Student drop-out', *Teaching at a Distance*, 24.

SALOMON, G. (1979) *The Interaction of Media, Cognition and Learning.* London: Jossey-Bass

SALOMON, G. (1983) *Using television as a unique teaching resource for OU courses.* Milton Keynes: The Open University (mimeo)